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FINAL DETERMINATION  
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L. M. Redman

JAN 23 - 1981

Dear General Groves:

1. In appreciation of the fact that for some time any delivery of atomic bombs which may be necessary will be by land based aircraft, and in further extenuation of Colonel Seeman's informal report of 24 September 1945 in your office on the above subject, the following remarks are submitted:

- a. A conference was held at Wright Field on 21 September 1945 to discuss future Army aircraft which might carry atomic bombs. This conference was attended by Colonel L. E. Seeman, J. R. Zacharias and D. R. Corson from Los Alamos and by Colonel Heflin and Captain Seample from Kingman. Wright Field personnel who attended included Brigadier General Craigie, Colonel G. F. Smith, Colonel F. J. Dent, Colonel Jarman, Major Roark, and others from the Air Technical Service Command Engineering (T-5) Division.
- b. The Army Air Forces' present bombardment aircraft development program was outlined. Under development are several medium bombers and one heavy bomber which can be considered for our purpose. The medium bombers are all jet-propelled. These include the B-45 (North American), B-46 (Consolidated), B-47 (Boeing) and B-48 (Martin). These aircraft have gross weights in the 80,000 and 100,000 pound range. They are powered by either two or three jet units in each of two nacelles. They are all designed around the 22,000 pound "Grand Slam" bomb, whose maximum diameter is 46 inches and whose length is 305 inches. The ranges of these aircraft are all about 2000 miles with a 13,000 pound bomb load. This means a tactical radius of 750-800 miles. They carry three crew members. The B-45 appeared to require major structural modifications to accommodate the Fat Man with its 60,000 pound diameter. The B-46 appeared to require only minor modification.

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in order to carry the Fat Man. The bomb bays of these aircraft are long enough to accomodate any increased Fat Man length we might wish. These aircraft are all in the mock-up and preliminary construction stage at present.

- c. The single heavy bomber considered is the B-36 (Consolidated). This is a plane with a 265,000 pound gross weight. It is powered by six 3,000 horsepower engines of conventional type. The engine nacelles are arranged along the trailing edge of the wing with the propellers acting as pushers. The B-36 is designed to carry 10,000 pounds of bomb 10,000 miles at a speed of 245 miles per hour. It has a maximum useful load of 80,000 pounds. The B-36 is nearing the flight test stage at present. It can easily carry the present Fat Man or any other likely configuration.
- d. ATSC has received a military requirement for a new heavy bomber capable of carrying 80,000 pounds of bombs to a very long range (10,000 miles or more) at high speed. No action has been taken on this requirement. Five years would probably be required to produce an experimental model of such a bomber.
- e. It was the opinion of the Los Alamos and Kingman representatives that none of the aircraft discussed above is suitable for carrying atomic bombs. The jet-propelled medium bombers have suitably high speeds (cruising speeds between 400 and 450 mph) but their restricted ranges put them definitely in the tactical bomber class. The B-36 has long range but the speed is low. Desirable performance characteristics are sacrificed to unnecessary (for our purpose) load-carrying capacity. The heavy bomber specified in the new requirement mentioned above also includes an unnecessary load carrying capacity.
- f. The conclusions arrived at by the Los Alamos and Kingman representatives are as follows:
1. The immediate redesign of the Fat Man must be aimed at the B-29. Numerous improvements in methods of support and in release mechanisms can be incorporated. Any major improvement in bomb ballistics is out of the question at present since the bomb length is dictated by the B-29 bomb bay.
  2. The B-45 and B-46 jet bombers should be inspected (at Los Angeles and San Diego respectively) to appraise more accurately the possibilities of these aircraft for carrying atomic bombs.

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- (3) Discussions with the appropriate Air Forces authorities in Washington (Requirements Division of ACAS-8) should be undertaken in order to arrive at a requirement for a long range bomber designed around a suitably modified Fat Man.
- (4) Appropriate technical liaison channels with Wright Field should be formalized.

2. In pursuence of the conclusions in Paragraph 1-f, it is recommended that:

- a. Through the appropriate section of Hqs. A.A.F., the A.T.S.C., with advice and consultation of the Laboratory, be authorized to improve the release mechanism for B-29 aircraft used for delivery of the atomic bomb.
- b. On or about 15 October two officers from the Engineering Division at Wright Field be authorized to meet with representatives of this Laboratory here and on the west coast further to jointly appraise the possibilities of B-43 and B-46 aircraft under development.
- c. The Joint Chiefs of Staff be requested to investigate the strategic circumstances of future atomic bomb delivery possibilities with a view to determining whether or not a specially designed long-range aircraft might be desirable in order to incorporate the improved range and speed which the lower total bomb load of the atomic bomb would permit.
- d. Specific officers be designated from A.A.F. and this laboratory to form a semi-permanent committee to channel development problems that arise and to make recommendations thereon. This committee might include the following:

From A.T.S.C.: Col. R. C. Wilson  
Col. F. J. Dent

From Manhattan District: Col. L. E. Seaman  
Dr. J. R. Zacharian

From A. A. F. : Col. W. P. Fisher  
Col. C. J. Refflin

3. The functions of the committee recommended in Paragraph 2-d above should be limited to development problems.

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separate function, of higher echelons of the War and Navy Departments, to determine policies on major adaptations and overall employment of the weapon (related to recommendation 2-c) should not fall within the scope of this development committee. Since this letter discusses delivery by land-based aircraft under Army cognizance, Navy participation is not included. Should the Navy Department desire to undertake similar development studies, the Manhattan District representatives would be available in the same capacity as herein described, either on a separate committee or on a joint committee, should the interests of coordination and efficiency so dictate.

Sincerely,

Norris E. Bradbury  
Director

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